

criticisms; to Dr. C. W. Dodge for assistance in the herbarium and to Dr. William R. Maxon, whose courtesy made possible the examination of Willey's specimens.

ONSET, MASSACHUSETTS.

#### EXPLANATION OF PLATE 187

CLADONIA PIEDMONTENSIS Merrill. Fig. 1, young plants (f. OBCONICA), Carver, Mass. *C. A. Robbins*, May, 1928; fig. 2, normally developed plants (f. OBCONICA), Carver, Mass. *C. A. Robbins*, May, 1928; fig. 3, normally developed plants (f. OBCONICA), Tryon, North Carolina, *A. W. Evans*, December, 1927; fig. 4, young plant (f. SQUAMULOSA), Washington, D. C., *S. F. Blake*, February, 1925; fig. 5, young plants (f. SQUAMULOSA), Prospect Hill, Fairfax County, Virginia, *S. F. Blake*, February, 1925; fig. 6, robust plants (f. SQUAMULOSA), High Point, North Carolina, *W. M. Tyler*, February, 1928; fig. 7, elongate plants (f. SQUAMULOSA), Charlotte, North Carolina, *F. W. Gray*, October 1924, (No. 388, *F. W. G.* in herb. Merrill, in Farlow Herbarium, Harvard University, *C. piedmontensis* Merrill, *Bryologist*, March, 1924. TYPE.); fig. 8, young plants (f. INTERMEDIA), Carver, Mass., *C. A. Robbins*, May, 1928; fig. 9, normally developed plants (f. INTERMEDIA), Carver, Mass., *C. A. Robbins*, May, 1928; fig. 10, elongate plants (f. INTERMEDIA), Carver, Mass., *C. A. Robbins*, May, 1928; fig. 11, normally developed plants (f. PHYLLOCOMA), Carver, Mass., *C. A. Robbins*, May, 1928; fig. 12, normally developed plants (f. PHYLLOCOMA), Fairhope, Alabama, *A. W. Evans*, February, 1925 (Herb. Yale Univ. No. 161); fig. 13 (f. SQUAMOSISSIMA), Carver, Mass., *C. A. Robbins*, May, 1928; fig. 14, young plants (f. LEPIDIFERA), Carver, Mass., *C. A. Robbins*, May, 1928; figs. 15 and 16, normally developed plants (f. LEPIDIFERA), Carver, Mass., *C. A. Robbins*, May, 1928; fig. 17, robust plants (f. LEPIDIFERA), Washington, D. C., *S. F. Blake*, March, 1925; fig. 18, normally developed plants (f. LEPIDIFERA), Burnt Mills, Maryland, *S. F. Blake*, February, 1926.

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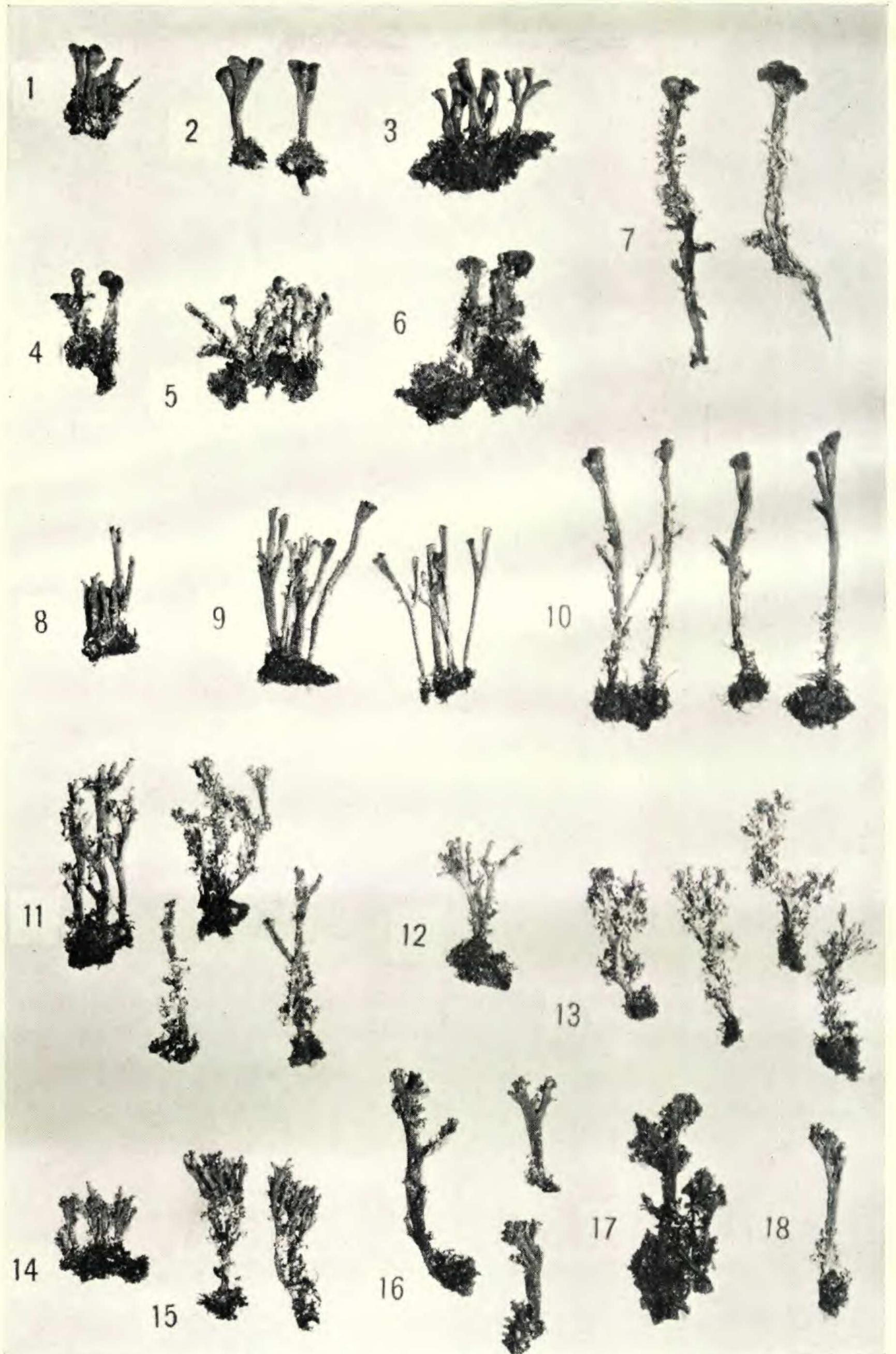
POLYGONELLA ARTICULATA (L.) Meisn., forma **atrorubens**, n. f., perianthiis atrorubentibus.—NEW HAMPSHIRE: sandy plains and borders of sandy woods, Nashua, October 3, 1928, *Fernald & Svenson*, no. 896 (TYPE in Gray Herb.).

The perianths of *Polygonella articulata* (generally known on the New England coast as "HEATHER") are ordinarily a delicate rosy-pink or pinkish-white or occasionally white. On the sand plains about Nashua the plant is so striking, on account of its intense dark-red or blackish-red color as to attract immediate attention.—M. L. FERNALD, Gray Herbarium.

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#### SEVENTH REPORT OF THE COMMITTEE ON FLORAL AREAS.

THE present report deals with the first three tribes of the *Gramineae* in the Manual order, *Maydeae*, *Andropogoneae*, and *Paniceae*,



FORMS OF CLADONIA PIEDMONTENSIS

Figs. 1-3, f. OBCONICA; 4-7, f. SQUAMULOSA; 8-10, f. INTERMEDIA;  
 11 and 12, f. PHYLLOCOMA; 13, f. SQUAMOSISSIMA; 14-18, f. LEPIDIFERA.

plus a single introduced species of the *Zoysieae*. Certain of the *Paniceae* offer considerable taxonomic difficulties and some questions of nomenclature, which require preliminary attention.

Those relating to the genus *Paspalum* have been elsewhere discussed (RHODORA xxx. 133 (1928)). As to *Panicum*, we are inclined heartily to second the remark of Professors Wiegand and Eames (Cornell Univ. Agric. Exp. Sta. Mem. xcii. 83 (1926)) that "the separation of species . . . on the basis of degree of pubescence is to be regretted." Hitchcock and Chase have rendered invaluable service in patiently tracking down the types of all such proposed species and definitely placing them in a taxonomic scheme. Many of them they have reduced to synonymy. After a long pursuit of vanishing "characters" through a maze of slightly differing herbarium specimens, we suspect that the reduction might profitably be carried further. Are there any real specific lines between *P. columbianum*, *P. tsugetorum*, and *P. subvillosum*; *P. meridionale* and *P. albemarlense*? Where does *P. columbianum*, var. *thinium* leave off and *P. meridionale* begin? Was Bicknell, a keen observer and by no means averse to recognizing close species, right in reducing *P. oricola* to *P. meridionale* and in maintaining *P. Owenae*; or are Hitchcock and Chase, fortified by long monographic study of the genus, correct in reducing *P. Owenae* and retaining *P. oricola*?

Such questions we have, for the most part, been unable to answer satisfactorily; we have, as the most practicable method, here maintained, at least as varieties, nearly all the species recognized in recent treatments, so far as we are able to make them out in the material at hand. We have, however, accepted with a good deal of relief Prof. Fernald's telescoping of *P. Lindheimeri*, *P. huachucae*, etc., into a single species. This arrangement gives, in New England, natural ranges; and it is conducive to ease in naming specimens, a quality which should appeal strongly to anyone condemned to struggle with this group. We have followed Dr. Hitchcock's earlier reduction of *P. Clutei* to synonymy under *P. mattamuskeetense* in preference to his later re-separation of the two. *P. oligosanthos* we have omitted altogether. Material of it from the southeastern states is at least varietally distinct from *P. Scribnerianum*, and the latter may stand as a species, as species go in *Panicum*; but the New England collections referred to *P. oligosanthos* appear to us to represent only slender states of *P. Scribnerianum*. New England reports of *P. lucidum* seem also to be erroneous.

In volume xiv of RHODORA, Mr. F. T. Hubbard published an article in which, in the course of applying the provision of the International Rules that no name shall be rejected because of the existence of an earlier homonym which is universally regarded as non-valid, he made several changes in the Manual names of species of *Panicum*. At the time, we, in common with other New England botanists, accepted these changes; but recent examination of the evidence and experience with nomenclatorial questions since 1912 have convinced us that, in most cases, we all gave to the rule in question a more liberal interpretation than its authors intended or than is desirable. We are now of the opinion that the phrase "universally regarded" should be taken quite strictly and literally, as applying only to cases in which there is no reasonable doubt.

Three instances may serve as illustrations of what we mean. Mr. Hubbard revived *Panicum debile* Ell. (1816) for *P. verrucosum* on the ground that its earlier homonym, *P. debile* Desf. (1798), had been definitely reduced to synonymy under *Digitaria sanguinalis*. But in so comparatively recent and so authoritative a work as Richter's *Plantae Europaeae* (1890), *P. debile* Desf. is maintained as a full species and under *Panicum* (p. 25). It is, therefore, as we see it, not *universally* regarded as a synonym and is an effective bar to the use of *P. debile* Ell. Hence we have returned to *P. verrucosum*—incidentally a far more appropriate name.

Again, Mr. Hubbard took up *P. macrocarpon* Torr. (1824) in place of *P. Scribnerianum* Nash, for the reason that the earlier *P. macrocarpon* LeConte (1819) was a synonym of *P. latifolium* L. Its reduction depends, however, wholly on Dr. Hitchcock's typification of *P. latifolium*<sup>1</sup> which, like so many Linnaean species, contained more than one thing. We see no cause to question Dr. Hitchcock's assignment of the name; but it is not that in use for a long time previously and can hardly yet be said to have been universally accepted. We accordingly use *P. Scribnerianum*, about which there is nothing doubtful.

On the other hand, *P. elongatum* Salisb. Prod. 18 (1812) is absolutely invalid, being merely a renaming of the valid *P. italicum* L., and is therefore no bar to the use of *P. elongatum* Pursh (1814), which we here take up in place of *P. stipitatum* Nash.

Stuntz (U. S. Dept. Agr. Bur. Pl. Ind. Invent. Seeds and Pl.

<sup>1</sup> See Cont. Nat. Herb. xii. 118 (1908).

Import. xxxi. 84 (1914)) has taken up for *Setaria glauca* (L.) Beauv. the name *Chaetochloa lutescens*, based on *Panicum lutescens* Weigel (or Willich), 1772,<sup>1</sup> on the ground that *P. glaucum* L. properly applies to the pearl millet, *Pennisetum americanum* (L.) Schum. He has been followed by Hitchcock and Chase (Cont. Nat. Herb. xxii. 165 (1920)) and Hubbard (RHODORA xviii. 232 (1916)), who made the transfer of Stuntz's name to *Setaria*. Stapf, however (Kew Bull. Misc. Inform. 1928, no. 4, 147), argues that though the two citations under *P. glaucum* proper in the first edition of the Species Plantarum refer to *Pennisetum americanum* and *Elytrophorus articulatus* respectively, Linnaeus himself, in Syst. ed. x. 870 (1758) and in the second edition of the Species Plantarum, redefined *P. glaucum* so as to make it apply to a plant which he had treated as var.  $\gamma$  in the first edition, but to which the specific name *glaucum* has ever since 1758 been attached; and that Linnaeus's decision should stand.

It may be doubted whether Linnaeus's action in shifting a name from what he had originally treated as the typical portion of the species concerned to what he had originally treated as a variety can properly be maintained under present-day nomenclatorial technique, however desirable it may be to maintain it. But, as Dr. Stapf indicates, the technical status of *P. lutescens* is at least as much open to doubt. Weigel, describing the differences between two species which grew in the fields about Stralsund, remarks that he *should have called* one *lutescens* ("*lutescens nominaverim*"; italics partly ours), while the other might answer to the name of *virescens*. He then goes on to say that *lutescens* is quite the same as *Panicum glaucum* L. (*i. e.*, *P. glaucum* of the Systema, ed. x and the second edition of the Species Plantarum); and he nowhere directly makes the combination *Panicum lutescens*, though, in most cases, he carefully uses "*Panicum*" or "*P.*" before the specific name when citing the Linnaean species. This is very half-hearted publication; we doubt if it is publication at all.

Of course, even though Weigel's name were completely invalid, Stuntz would have had the right, under the International Rules, to take it up and validate it, had no other names intervened between 1772 and 1914. But there are at least six such names (Richter, Pl. Eur. i. 27). There is, indeed, something the matter with the

<sup>1</sup> The work in question, *Observationes Botanicae*, is apparently an academic dissertation, similar to those published by Linnaeus in the *Amoenitates*, done by a student named Willich under the direction of Weigel.



	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Sorghum caffrorum</i> Beauv.....				+		+
“ <i>halepense</i> L.....				+		+
III. ZOYSIEAE.						
<i>Tragus racemosus</i> Hall.....	+			+		
IV. PANICEAE.						
<i>Cenchrus echinatus</i> L.....				+		
“ <i>pauciflorus</i> Benth.....	+	+	+	+	+	+
<i>Digitaria filiformis</i> (L.) Koeler.....		+		+	+	+
“ <i>Ischaemum</i> Schreb.....	+	+	+	+	+	+
“ <i>laeviglumis</i> Fernald.....		+				
“ <i>sanguinalis</i> (L.) Scop.....	+	+	+	+	+	+
<i>Echinochloa crus-galli</i> (L.) Beauv.....	+	+	+	+	+	+
“ “ “ “ <i>f. longiseta</i> (Trin.) Wiegand.....	+		+	+	+	+
“ “ “ “ <i>f. vittata</i> Hubbard.....				+		
“ <i>frumentacea</i> (Roxb.) Link..	+	+		+		+
“ <i>muricata</i> (Michx.) Fernald..	+	+		+	+	+
“ “ (Michx.) Fernald var. <i>microstachya</i> Wiegand.....	+	+	+	+	+	+
“ “ (Michx.) Fernald var. <i>occidentalis</i> Wiegand.....	+	+		+	+	
“ <i>Walteri</i> (Pursh) Nash.....				+	+	+
“ “ “ “ <i>f. laevigata</i> Wiegand.....				+		
<i>Leptoloma cognatum</i> (Schultes) Chase...		+	+			+
<i>Panicum aculeatum</i> H. & C.....						+
“ <i>agrostoides</i> Spreng.....	+	+	-	+	+	+
“ <i>albemarlense</i> Ashe.....				+	+	+
“ <i>amarum</i> Ell.....						+
“ <i>annulum</i> Ashe.....				+		
“ <i>Ashei</i> Pearson.....				+	+	+
“ <i>auburne</i> Ashe.....				+		
“ <i>Bicknellii</i> Nash.....				+		+
“ <i>boreale</i> Nash.....	+	+	+	+		+
“ <i>Boseii</i> Poir.....		-		+		+
“ “ “ var. <i>molle</i> (Vasey) H. & C.....						+
“ <i>calliphyllum</i> Ashe.....				+		
“ <i>capillare</i> L.....	+	+	+	+	+	+
“ “ “ var. <i>occidentale</i> Rydb.....	+	+	+	+	+	+
“ <i>clandestinum</i> L.....	+	+	+	+	+	+
“ <i>columbianum</i> Scribn.....	+	+	-	+	+	+
“ “ “ var. <i>thinium</i> H. & C.....				+	+	+
“ <i>Commonsianum</i> Ashe.....				+		+
“ “ “ var. <i>Addisonii</i> (Nash) Stone.....				+		+
“ <i>commutatum</i> Schultes.....				+		
“ <i>depauperatum</i> Muhl.....	+			+	+	+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Panicum depauperatum</i> Muhl. var. <i>psillophyllum</i> Fernald.....	+	+	+	+	+	+
“ <i>dichotomiflorum</i> Michx.....	+	+		+	+	+
“ <i>dichotomiflorum</i> Michx. var. <i>puritanorum</i> Svenson.....				+	+	
“ <i>dichotomum</i> L.....	+	+	+	+	+	+
“ “ “ var. <i>barbulatum</i> (Michx.) Vasey			—	+	+	+
“ <i>elongatum</i> Pursh.....						+
“ <i>lanuginosum</i> Ell.....					+	
“ <i>latifolium</i> L.....	+	+	+	+	+	+
“ <i>Lindheimeri</i> Nash.....	+	+	+	+	+	+
“ <i>Lindheimeri</i> Nash var. <i>fasciculatum</i> (Torr.) Fernald.....	+	+	+	+	+	+
“ <i>Lindheimeri</i> Nash var. <i>implicatum</i> (Scribn.) Fernald.....	+	+	+	+	+	+
“ <i>Lindheimeri</i> Nash var. <i>septentrionale</i> Fernald.....	+	+	+	+	+	+
“ <i>linearifolium</i> Scribn.....	+	+	+	+	+	+
“ <i>linearifolium</i> Scribn. var. <i>Wernerii</i> (Scribn.) Fernald.....	+	+	+	+	+	+
“ <i>longifolium</i> Torr.....				+	+	+
“ <i>mattamuskeetense</i> Ashe.....				+	+	
“ <i>meridionale</i> Ashe.....				+	+	+
“ <i>microcarpon</i> Muhl.....				+	+	+
“ <i>miliaceum</i> L.....	+	+	+	+	+	+
“ <i>oricola</i> H. & C.....				+	+	+
“ <i>Owenae</i> Bickn.....				+		
“ <i>philadelphicum</i> Bernh.....				+	+	+
“ <i>polyanthes</i> Schult.....				+		+
“ <i>pseudopubescens</i> Nash.....						+
“ <i>scoparioides</i> Ashe.....			—	+		+
“ <i>scoparium</i> Lam.....				+	+	
“ <i>Scribnerianum</i> Nash.....	+	+	+	+	+	+
“ <i>sphaerocarpon</i> Ell.....		—	+	+	+	+
“ <i>spretum</i> Schultes.....	+	+		+	+	+
“ <i>subvillosum</i> Ashe.....	+	+	+	+		+
“ <i>texanum</i> Buckl.....				+		
“ <i>tsugetorum</i> Nash.....	+	+	+	+	+	+
“ <i>Tuckermani</i> Fernald.....	+	+	+	+	+	+
“ <i>verrucosum</i> Muhl.....				+	+	+
“ <i>villosissimum</i> Nash.....				+	+	+
“ <i>virgatum</i> L.....		+	+	+		+
“ “ “ var. <i>spissum</i> Linder	+	+		+	+	+
“ <i>Wrightianum</i> Scribn.....				+		
“ <i>xanthophysum</i> Gray.....	+	+	+	+		+
<i>Paspalum circulare</i> Nash.....						+
“ <i>psammophilum</i> Nash.....				+	+	+
“ <i>pubescens</i> Muhl.....		+	+	+	+	+
“ <i>setaceum</i> Michx.....				+	+	+
<i>Setaria geniculata</i> (Lam.) Beauv.....				+		+
“ <i>glauca</i> (L.) Beauv.....	+	+	+	+	+	+
“ <i>italica</i> (L.) Beauv., subsp. <i>stramineofructa</i> Hubbard.....	+	—		+		+
“ <i>italica</i> (L.) Beauv., subsp. <i>stramineofructa</i> Hubbard, subvar. <i>germanica</i> (Mill.) Hubbard...	+			+	+	+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Setaria italica</i> (L.) Beauv., subsp. stramineofructa Hubbard, var. <i>Hostii</i> Hubbard . . . . .	+			+		+
“ <i>italica</i> (L.) Beauv., subsp. stramineofructa Hubbard, subvar. <i>Metzgeri</i> (Körnicke) Hubbard . . . . .	+	+	+	+	+	+
“ <i>verticillata</i> (L.) Beauv. . . . .		—	+	+	+	+
“ <i>viridis</i> (L.) Beauv. . . . .	+	+	+	+	+	+
“ <i>viridis</i> (L.) Beauv. var. <i>Weinmannii</i> (R. & S.) Brand . . . . .	+	+	+	+		

The following references will help to account for names in the above list which are not in the Manual or are there used in different categories: Bicknell, Bull. Torr. Bot. Club xxv. 185 (*Panicum Owenae*); Chase, Cont. Nat. Herb. xxii. 67 (*Cenchrus pauciflorus*); Fernald, RHODORA xxi. 110 (*Panicum Tuckermanni* and *P. capillare*, var. *occidentale*); xxii. 102 (*Digitaria laeviglumis*), xxiii. 193, 194, 227 (*Panicum depauperatum*, var. *psilophyllum*, *P. linearifolium*, var. *Wernerii*, *P. Lindheimeri* and vars.); Fernald & Wiegand, RHODORA xii. 133 (*Setaria viridis*, var. *Weinmannii*); Hitchcock, Cont. Nat. Herb. xxii. 168 (*Setaria geniculata*); Hitchcock & Chase, Cont. Nat. Herb. xv. 94 (*Panicum amarum*); Hubbard, RHODORA xviii. 231, 232 (*Digitaria Ischaemum*, *Setaria viridis*, var. *Weinmannii*), Am. Journ. Bot. iv. 169 (varieties of *Setaria italica*); Linder, RHODORA xxiv. 11 (varieties of *Panicum virgatum*); Stone, Pl. So. New Jersey 505 (*Panicum Commonsianum*, var. *Addisonii*); Svenson, RHODORA xxii. 154 (varieties of *Panicum dichotomiflorum*); Vasey, Bull. U. S. Dept. Agric. Div. Bot. viii. 30 (*Panicum dichotomum*, var. *barbulatum*); Wiegand, RHODORA xxiii. 49 (*Echinochloa*).

Of the rarer introduced species in our list, *Miscanthus sinensis* has been found at Boston and Worcester, Mass., and Greenwich, Conn.; *Tragus racemosus* at North Berwick, Maine (Parlin) and South Boston (C. E. Perkins); *Panicum texanum* in cotton waste at Malden (F. S. Collins); and *Cenchrus echinatus* at Lowell (Swan). The Sorghums are occasionally spontaneous in southern New England and *Zea Mays* as far north as New Hampshire. The other foreign species are more or less well-known weeds, some of them only too familiar.

Geographically, the groups here considered are notable for the great preponderance of southern species. There is none which, in New England, is strictly northern; the majority are either found chiefly in the three southern states or are entirely confined to them.

The geographic arrangement follows closely the lines of previous reports, with one exception. We are recognizing tentatively a new group, under the caption "Chiefly east of the Connecticut." The species assigned to it are not found west of the Connecticut Valley except in southern Connecticut; they do not reach northern New Hampshire; and in Maine they do not penetrate much, if any, north of the 45th parallel. Their collective range dovetails almost perfectly with that of the calcicolous group (see RHODORA xxii. 87); herein may be found a hint as to the reason for their peculiar distribution. They are probably plants of strongly acid soils, and such soils are found more abundantly in eastern New England than in western and northern, where calcareous areas are frequent.

In addition to the species here enumerated, *Solidago uniligulata* belongs with this group (see RHODORA xxvii. 65).

I. GENERALLY DISTRIBUTED.—*Andropogon scoparius*, var. *frequens*; *Panicum Lindheimeri*, var. *fasciculatum*; *P. capillare*, var. *occidentale*; *P. linearifolium*.

Only two of the above have an absolutely general distribution. *Andropogon scoparius*, var. *frequens* and *Panicum linearifolium* are not known in southeastern Maine east of the Penobscot Valley, nor near the coast east of the Kennebec. The former is also absent from the Sandy River valley in Franklin Co., Maine.

II. RATHER GENERAL EXCEPT IN SOUTHEASTERN MASSACHUSETTS.—*Panicum boreale*; *P. Lindheimeri*, var. *septentrionale*; *P. Tuckermani*.

*Panicum boreale* has not been found in Rhode Island, but in all probability actually occurs there, since it is known from several stations in eastern Connecticut, some of them very near the state line.

III. RATHER GENERAL EXCEPT IN NORTHERN MAINE.—*Andropogon furcatus*; *Panicum agrostoides*; *P. capillare*; *P. clandestinum*; *P. depauperatum*, var. *psilophyllum*; *P. dichotomum*; *P. latifolium*; *P. Lindheimeri*, var. *implicatum*; *P. linearifolium*, var. *Wernerii*; *P. tsugetorum*; *Sorghastrum nutans*.

Of the species here included, two only—*Panicum latifolium* and *P. Lindheimeri*, var. *implicatum*—have what may be called the standard range for this group. None of the others reach extreme southeastern Maine, and *Andropogon furcatus* is absent also from the coastal region east of the Kennebec. *Panicum agrostoides*, *P.*

*dichotomum*, and *Sorghastrum nutans*, though reaching the Penobscot Valley, have, so far as the specimens at hand show, comparatively few and scattered stations north of the 43rd parallel. *Panicum tsugetorum*, though getting well north in the Champlain Valley, is not known to us in Maine east of the Androscoggin. These four species constitute a transition to Group V, and would go almost as well in it.

In the other direction, *Panicum latifolium* and *P. linearifolium*, var. *Wernerii* thin out notably in southeastern Massachusetts. They have but one station each on Cape Cod and are not known from Nantucket or Martha's Vineyard. This is readily enough accounted for in the case of the former, a species of rocky woodlands; the reason for the latter's scarcity in this region is not so obvious.

IV. CHIEFLY EAST OF THE CONNECTICUT.—*Echinochloa muricata*; *Panicum depauperatum*; *P. spretum*; *P. virgatum*, var. *spissum*.

The typical forms of *Panicum depauperatum* and *Echinochloa muricata* have only lately been segregated from other varieties and are, of course, not recognized in any but the most recent local floras. Further data may show that they (and especially the former) do not belong in this group.

V. CHIEFLY THE THREE SOUTHERN STATES.—*Andropogon virginicus*; *Cenchrus pauciflorus*; *Digitaria filiformis*; *Panicum Ashei*; *P. Boscii*; *P. Boscii*, var. *molle*; *P. columbianum*; *P. dichotomiflorum*; *P. dichotomum*, var. *barbulatum*; *P. elongatum*; *P. Lindheimeri*; *P. microcarpon*; *P. philadelphicum*; *P. Scribnerianum*; *P. sphaerocarpon*; *P. villosissimum*; *Paspalum circulare*; *P. pubescens*; *P. setaceum*.

Nothing could better illustrate the difficulty of making any hard and fast geographic classification of New England plants than the species here included. Most of them are of obvious geographic affinity, as their ranges outside of New England show.<sup>3</sup> But within our area, their distribution varies extraordinarily in detail. Some connect closely with group III; some, at the other extreme, penetrate no farther than Connecticut; and there is nearly every possible

<sup>3</sup> These are, very uniformly, Maine, Massachusetts or Connecticut to Nebraska, Kansas or Missouri and southward. The exceptions are: *Cenchrus pauciflorus*, which is a widely distributed weed in the United States; *Panicum Scribnerianum*, which extends across the continent to Washington and south in the central United States to Texas, but is not known in the southeastern states; and *P. columbianum*, which is reported only from the coastal states and only as far south as Virginia. However different these may be in their ranges outside New England, within it they can only be placed in this group.

gradation between. Perhaps we shall know some time why, of several species of like general range and soil preference, all reaching their northeastern limits in New England, some should stop at one point, some a few miles beyond, and so forth—if, indeed, any other element than chance is involved.

The supplementary tables which follow give a graphic idea of this gradual shading off of ranges, and also of the rather irregular distribution of known stations north of latitude 43. For the sake of fullness and to show how not only the ranges of species but the groups themselves grade into one another, four transitional species from group III are included in table 2. The signs + and - have the same significance as in the main table at the beginning of this report.

Table 2. SPECIES WITH OUTLYING STATIONS NORTH OF 43°.

The abbreviations at the heads of the columns, taken from left to right, signify respectively the Champlain, Connecticut, Merrimac, Androscoggin, and Penobscot valleys.

	Champ.	Conn.	Merr.	Saco	Andr.	Penob.
<i>Sorghastrum nutans</i> . . . . .	+	+			+	+
<i>Panicum dichotomum</i> . . . . .	+		+	-		+
“ <i>agrostoides</i> . . . . .		-	+	+	+	+
“ <i>tsugetorum</i> . . . . .	+	+	+	+	+	
“ <i>Lindheimeri</i> . . . . .	+				+	
“ <i>dichotomiflorum</i> . . . . .				+		
<i>Cenchrus pauciflorus</i> . . . . .	+	+	+			
<i>Panicum columbianum</i> . . . . .	-		+			
<i>Paspalum pubescens</i> . . . . .		+	+			
<i>Panicum dichotomum</i> var. <i>barbulatum</i> . . . . .	-		+			
<i>Panicum Scribnerianum</i> . . . . .		+	+			

A majority of the above species are generally distributed in the three southern states. *Panicum dichotomum*, var. *barbulatum*, *P. dichotomiflorum*, *P. Lindheimeri*, and *P. Scribnerianum*, however, are not found in Massachusetts west of the Connecticut Valley, and *P. Lindheimeri* is not known from Cape Cod. *Cenchrus pauciflorus* is said by Mrs. Flynn to be only introduced about Burlington (Contr. to the Botany of Vermont ix. 11 (1911)).

*Panicum Boscii* is reported from Maine in the Manual, but as that record is omitted in Hitchcock and Chase's Monograph of *Panicum*, it is probably erroneous and no account of it is here taken.

TABLE 3. SPECIES WITH NO STATIONS NORTH OF 43°.

	Conn.	R. I.	Mass. s. e. Cos.	Mass. n. e. Cos.	Mass. Conn. Valley	Mass. Berk. Co.
<i>Digitaria filiformis</i> .....	+	+	+	+	+	+
<i>Panicum sphaerocarpon</i> .....	+	+	+	+		+
“ <i>Ashei</i> .....	+	+	+	+		+
“ <i>philadelphicum</i> .....	+	+				+
<i>Andropogon virginicus</i> .....	+	+	+	+	—	
<i>Panicum microcarpon</i> .....	+	+	+	+		
“ <i>villosissimum</i> .....	+	+	—	+		
“ <i>Boscii</i> .....	+	+		+		
<i>Paspalum setaceum</i> .....	+	+	+			
<i>Panicum polyanthes</i> .....	+		+			
“ <i>Boscii</i> , var. <i>molle</i> ....	+					
<i>Paspalum circulare</i> .....	+					
<i>Panicum elongatum</i> .....	+					

VI. COASTAL PLAIN.—*Andropogon glomeratus*; *A. scoparius*; *A. scoparius*, var. *polyclados*; *Echinochloa Walteri*; *Panicum albemarlense*; *P. annulum*; *P. auburne*; *P. Bicknellii*; *P. columbianum*, var. *thinium*; *P. Commonsianum*; *P. Commonsianum*, var. *Addisonii*; *P. dichotomiflorum*, var. *puritanorum*; *P. lanuginosum*; *P. longifolium*; *P. mattamuskeetense*; *P. meridionale*; *P. oricola*; *P. Owenae*; *P. polyanthes*; *P. scoparium*; *P. verrucosum*; *P. Wrightianum*; *Paspalum psammophilum*.

In this group also there is considerable variation in details of range. *Panicum meridionale* extends north to Essex County, Massachusetts, and in the Connecticut Valley to Springfield. *Echinochloa Walteri*, *Panicum columbianum*, var. *thinium*, *P. Commonsianum*, var. *Addisonii*, and *P. oricola* reach northeastern Massachusetts, but not Springfield, though the second and third ascend the Connecticut to the vicinity of Hartford. *Panicum albemarlense* and *P. verrucosum* occur at Springfield, but not in northeastern Massachusetts. *Paspalum psammophilum* and *Panicum longifolium* reach neither, though found in all three southern states. Typical *Andropogon scoparius* and var. *polyclados* occur in northeastern and southeastern Massachusetts and in Connecticut, but have not been reported from Rhode Island. *Panicum Bicknellii*, *P. Commonsianum*, and *P. polyanthes* occur in southeastern Massachusetts and in Connecticut, but, likewise, have not been detected in Rhode Island. *P. scoparium* and *P. dichotomiflorum*, var. *puritanorum* are found both in Massachusetts and Rhode Island, but not in Connecticut. The rest are restricted to southeastern Massachusetts, except *Panicum lanuginosum* which is known only from Block Island.